Australian Network for Plant Conservation

NEWSLETTER

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AUSTRALIA
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FIRST ADVISORY COMMITTEE MEETING

A key element in the development of the Australian Network for Plant Conservation will be the Advisory Committee whose role was outlined in the Proposal for the ANPC. The purpose of the Advisory Committee is to :

a) assist the co-ordinating office to develop and maintain co-operation between botanic gardens, kindred organisations and land management agencies;

b) advise on plant conservation activities for the ANPC including the review of funding and fund raising possibilities;

c) advise on the operation of the co-ordinating office.

The membership of the Advisory Committee is being drawn from botanic gardens, zoological gardens, non-government institutions, national parks and wildlife services (including the ANPWS), industry and the CSIRO. The Co-ordinating Office has approached potential members and, at the time of writing, the following have accepted our invitation to join the Committee.

Dr A H D Brown, CSIRO Division of Plant Industry.
Dr M Brown, Tasmanian Forestry Commission.
Mr Geoff Farnell, Australian Mining Industry Council.
Dr Steve Harris, Department of Parks, Wildlife and Heritage, Tasmania.
Dr Roger Hnatiuk, Australian National Botanic Gardens, (representing the Council of Heads of Australian Botanic Gardens).
Professor Henry Nix, (representing the Association of Societies for Growing Australian Plants).
Dr Bob Parsons, Botany Department, La Trobe University.
Dr Barbara Porter, Australasian Species Management Program.
Dr David Aldous, VCAH-Burnley, (representing Royal Australian Institute of Parks and Recreation).
Ms Rose Turner, Aboriginal Employment and Development Program,Bureau of Rural Resources.

The first meeting of the Advisory Committee will take place on 21 May, 1992

NEWS

Subscription Renewals
For ease of management it has been decided that subscriptions to ANPC should be for a calendar year. Subscriptions for 1993 will therefore fall due on 1 January 1993. Future subscriptions received after 30 September will be considered to be for the following year, but subscribers will in effect receive 3 months 'free' membership.

NEW PUBLICATIONS

"Threatened Australian Plants ". This publication, edited by JH Leigh and JD Briggs, presents a series of case studies for rare or threatened plants of each state and the Northern Territory of Australia. The book describes the magnitude of the Australian flora, the extent to which it is considered safe, rare or threatened,

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the extent to which it is formally reserved within national parks and reserves, the types of habitats in which threatened species are found and the nature of past and present threats. A wide range of plant forms is covered including ferns, grasses, orchids, herbs, shrubs, palms and trees. The case studies illustrate the variety and nature of the factors threatening our flora. 'Threatened Australian Plants' is published by the Australian National Parks and Wildlife Service and is available from 'The Botanical Bookshop', PO Box 351, Jamison, ACT, 2614 (telephone 06-2573302), price $20 plus $5 postage and packing.

"Kowari" - the journal of the Australian National Parks and Wildlife Service. 'Kowari' is a broadly-based professional publication to disseminate information on the full range of ANPWS responsibilities and interests. The second edition of 'Kowari', *Plant Invasions, the incidence of environmental weeds in Australia*, has recently been published. This edition comes in two parts.
The first, a report on plant invasions of Australian ecosystems, covers all regions of Australia and selects 18 top weed species in need of particular attention. Part two is a republication of a selection of the proceedings of the N inth Australian Weeds Conference held in Adelaide, South Australia, in August, 1990. 'Kowari' is available from 'The Botanical Bookshop' in Canberra or from Commonwealth Government Bookshops. Price is $25 plus $10 postage and packing.

"Australian Plants at Risk " is an educational kit produced by the Australian National Botanic Gardens and the Endangered Species Unit of the Australian National Parks and Wildlife Service. The kit comprises case studies of 8 plants at risk in their natural habitats, one from each state and territory. The kit is designed for upper and lower secondary students and their teachers and can be used in many subject areas including environmental education, social science, horticulture, science, ecology, botany, Australian studies, art, drama and creative writing.

It provides teachers with ideas for lesson topics and class activities aimed at increasing student's knowledge and understanding of our plants at risk and the threats to these plants and their habitats.
The kit contains:

notes for teachers
artwork, notes and activity sheets for students
references and other resources
a brochure on endangered plants
a colourful and informative poster on endangered species.

An accompanying slide set is available for loan from botanic gardens in the state and territory capital cities.

The cost of 'Australian Plants at Risk' is $10 plus $5 postage and packing and is available from the Botanical Bookshop at the address above. For bulk orders (10 or more) of any of the above publications, contact Cath Jones, Australian National Parks and Wildlife Service, phone 06-2509556

Information concerning new publications should be sent to the Editor, ANPC Newsletter.

CONFERENCE AND SEMINAR REPORTS AND NOTICES

New Zealand

A conference entitled "People, Plants and Conservation: Botanic Gardens into the 21st Century", was held in Wellington, New Zealand, in March 1992. It was jointly organised by the Royal New Zealand Institute of Horticulture, the New Zealand Arboricultural Association and the Centre for Continuing Education, Victoria University of Wellington. The Conference celebrated 100 years of Council administration of the Wellington Botanic Gardens. Representatives from throughout New Zealand from both private and public gardens attended. Representatives of three ANPC members (Royal Botanic Gardens, Sydney, Adelaide Botanic Gardens and the Australian National Botanic Gardens) also attended.

The morning of the second day was devoted to conservation and a paper by Mark Richardson and Geoff Butler entitled "Australian Network for Plant Conservation" was presented. The paper discussed the ANPC's development to date and its relevance to the NZ situation. A conservation workshop was held on the fourth day and the outcome of that workshop was similar to those held in Canberra in 1991. It was basically agreed that gardens in New Zealand have a role to play in plant conservation, that national co-ordination is required and that the offer by the Royal New Zealand Institute of Horticulture to provide assistance for that co-ordination be accepted.

The New Zealand network is keen to interact with the ANPC. This will provide another valuable source of horticultural information to assist both Australian and New Zealand conservation efforts.

Indonesia

A Conference is to be held by Kebun Raya Bogor (Bogor Botanic Gardens) in Indonesia on 20-23 July, 1992. The Conference is to start the development of a "Strategy of Indonesian Flora Conservation" and to discuss the establishment of a conservation network in Indonesia and S-E Asia. The Conference also celebrates Kebun Raya Bogor's 175th anniversary.

Speakers from organisations throughout the world including the ANPC have been invited to speak. A report will be given in the next Newsletter.

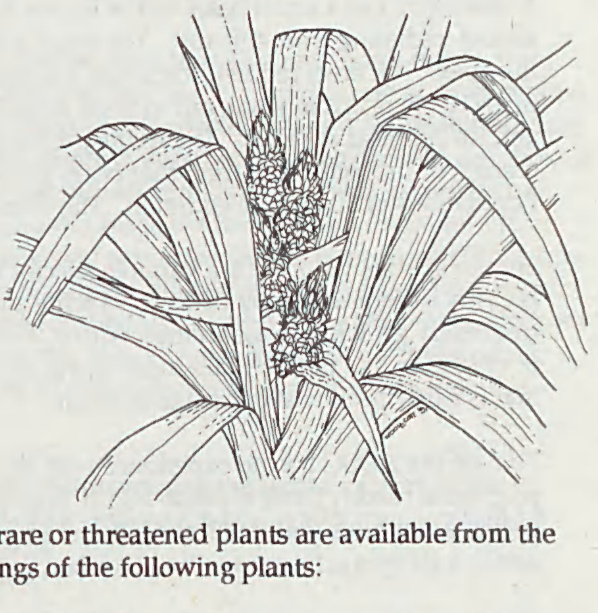
Brazil

The Third International Botanic Gardens Conservation Congress will be held in Rio de Janeiro, Brazil from October 19-23, 1992. The theme of the third Congress is "Botanic Gardens in a Changing World" and the host will be the Jardim Botânico do Rio de Janeiro. The Congress will provide an opportunity to review the continued progress and involvement of botanic gardens worldwide in the implementation of the World Conservation Strategy and in particular their response to the challenge posed by climate change. It will allow delegates to discuss many of the issues that challenge botanic gardens as they develop programs and plans to preserve endangered biodiversity and to strengthen their institutions for this task.

It is expected that the Congress will prepare a set of concluding resolutions. The organisers will later publish the proceedings as a book. For further information about the Congress, please contact: Botanic Gardens Conservation International, Descanso House, 199 Kew Road, Richmond, Surrey, TW9 3BW, United Kingdom.

Any notices or reports of conferences held in Australia or overseas that will be of interest to ANPC memmbers should be sent to the Editor, ANPC Newsletter For notices, remember that the Newsletter is only produced quarterly.

PLANT ILLUSTRATIONS AVAILABLE



Black and white line drawings of a number of Australia's rare or threatened plants are available from the Australian National Botanic Gardens. Included are drawings of the following plants:

Astelia australiana, Asterolasia nivea, Rutidosis leptorrynchoides, Eucalyptus risdonii, Austromyrtus gonoclada, Ricinocarpos gloria-medii, Pimelea spicata, Phebalium equestre, Phaius tankervilliae, Lechenaultia longiloba, Hibiscus insularis, Grevillea iaspicula, Swainsona recta, Westringia crassifolia, Daviesia euphorbioides, Acacia pinguifolia.

For information on the use of these drawings in non-profit or commercial publications, contact the Assistant Director, Public Programs, Australian National Botanic Gardens, GPO Box 1777, Canberra, 2601, telephone 06-2509450.

'The Public Garden'

The American Association of Botanic Gardens and Arboreta (AABGA) publishes an excellent quarterly magazine, 'The Public Garden', which would be of interest to anyone involved in the management of botanic gardens of all types and sizes. Recent issues of 'The Public Garden' have addressed such themes as conservation, public access and signage, trees, water usage and erosion control, children and botanic gardens, and botany. Subscriptions to 'The Public Garden' are US$31 per year for subscribers outside the USA. The address of the AABGA is 786 Church Road, Wayne, PA 19087, USA.

News Wanted

We would like to ask ANPC members to let us have copies of any reports on plant conservation (particularly endangered species) issues that may appear in newspapers or magazines. If you see anything that you think would interest or concern ANPC members, please send a copy to the National Office..

SPECIES PROFILE

BRACHYSCOME STOLONIFERA G L Davis

By Esma Salkin, Australian Daisy Study Group (ASGAP)

Brachyscome stolonifera is a dwarf glabrous stoloniferous endemic found in the shallow pools of snow melt, bogs and fens of the Kosciusko plateau, that is, above 1700m. This brachyscome, which blooms early in the alpine spring, can easily be overlooked, because of its small stature and because it shares its habitat with vegetatively similar species, *B. obovata* and *B. tadgellii.*

B. stolonifera has a small basal tuft of leaves 2cm in diameter, often submerged in water with usually 4 leafy stolons radiating from this tuft. The basal leaves, 2cm long and 0.1-0.2cm wide are entire, linear and obtuse at the apex. The erect reddish scape has a single bract 0.5cm long. The terminal flowerhead of white or pink rays (16-25) is 1-2cm wide, but in good situations can be up to 3.5cm wide. The involucral bracts are reddish and fimbriate at the apex. The reddish-brown fruit, about 2×1mm, has a thickened body with a narrow crenate or tuberculate margin that bears glandular hairs distally. The conspicuous pappus is silky white. Populations of 50-100 are common. The conservation status is 3RCat.

Similar species: *B. ovata* is a variable species but depauperate specimens can be confused with *B. stolonifera.* It is easily differentiated by its fruit, which is obovate smooth and has a microscopic pappus. *B. tadgellii* is more frequently growing in association with *B. obovata.* It tends to be much larger and a more vigorous plant than *B. stolonifera* and one or more basal leaves are regularly lobed. The fruit has a wide wing and a large pappus that is easily seen without magnification.

To date the ADSG has no experience with the cultivation of *B. stolonifera*, however *B. obovata* and *B. tadgellii* propagate readily from division and *B. tadgellii* germinates readily from seed. *B. obovata* gives low germination rates with fresh seed, but seed kept moist on the surface of seed raising medium, for example under mist spray, from March to October, gave excellent germination in October.

If you have information on the propagation and cultivation of Brachyscome stolonifera, please write to Esma Salkin, Australian Daisy Study Group, 38 Pinewood Drive, Mt. Waverley, Victoria, 3149.

CRYOPRESERVATION OF GREVILLEA SCAPIGERA

Darren Touchell and Kingsley Dixon,
Kings Park and Botanic Garden, West Perth, W.A. 6005.

***Grevillea scapigera*, an endangered species from Western Australia, has been successfully stored in liquid nitrogen and revived. This is the first time in Australia that an endangered plant species has been cryopreserved. Cryopreservation may now offer an excellent means for long-term storage of rare or threatened Australian plants.**

The need for genetic conservation of important crop species, and more recently, rare or threatened species has seen the establishment of gene banks around the world. However, conventional means of storing germplasm (seed, slow-growth storage, container and living collections) has many disadvantages including:

- loss of viability over time for seed collections
- exposure to natural calamities for vegetative propagules
- risk of infection by pathogens
- exposure to predators
- genetic drift

Cryopreservation (the storage of biological material at ultra low temperatures such as that of liquid nitrogen at - 196^0C) offers a means of long-term preservation when genetic populations are not subjected to the disadvantages inherent to conventional preservation techniques. However, in order to successfully cryopreserve plant species complex procedures involving the application of cryoprotectants to specimens and the subsequent freezing, thawing and regeneration of plants are required.

Cryopreservation is used as a means of long-term conservation of important crop species but has received scant attention for the conservation of rare or threatened species. The first successful cryopreservation of a rare or threatened species was of cell suspensions of *Brunfelsia densifolia* (Pence, 1990). As a part of the endangered species program at Kings Park and Botanic Garden, exploration of cryopreservation as a means of long-term maintenance of germplasm began in 1991.

The Corrigin Grevillea (*Grevillea scapigera*) is an endangered species, with only five remaining plants, from the south-west of Western Australia and is one of the 238 WA plants that are in a critical state of conservation and likely to become extinct in the next 10 years. The critical status of this species makes it an ideal candidate for cryopreservation. Shoot-tips taken from invitro maintained plantlets were treated with dimethylsulphoxide (DMSO), a chemical that acts to prevent freeze injury to material during a freeze-thaw cycle, before being frozen slowly to -40℃ followed by plunging and storage in liquid nitrogen. After thawing two weeks later shoot-tips were placed on a solid medium. Twenty percent survival was obtained from the frozen shoot-tips, however survival wasn't observed until at least 19 days after thawing. Callus proliferated from the thawed shoot-tips and shoots did not appear until 22 weeks after thawing. Shoots have continued to proliferate from this callus mass and are likely to be potted out soon. Although this is low compared to results obtained in other studies (Kartha et al 1979; Towill 1983), it is encouraging in that it shows that cryopreservation techniques are applicable to an endangered species.

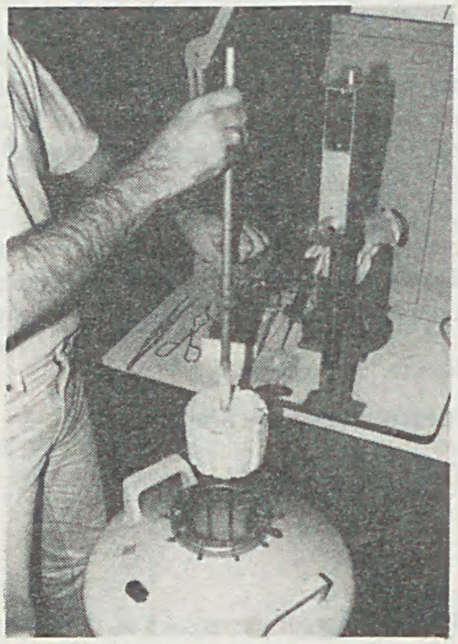
Further work will centre on increasing the post-thaw survival and decreasing the length of time of the intermediatory callus phase. It is hoped that the protocol for cryopreservation of *Grevillea scapigera* will be able to be adapted to other rare or threatened Australian species.

References

Kartha, K..K,. Leung, N.L, Gamborg, O.L (1979) Freeze-preservation of pea meristems in liquid nitrogen and subsequent plant regeneration. Plant Science Letters. 15, 7-15.

Pence, V.C, (1990) *In vitro* collection, regeneration and cryopreservation of *Brunfelsia densifolia*. In: Abstracts, VIIth International Congress on Plant Tissue and Cell Culture, IAPTC.

Towill, L.E, (1983) Improved survival after cryogenic exposure of shoot tips derived from *in vitro* plantlet cultures of potato. Cryobiology 20, 567-573.



Improvised slow-cooling device consisting of polystyrene block with 10 spaces for cryovials. The polystyrene block is lowered progressively into a Dewer of liquid nitrogenn to effect slow-cooling of sample vials.

EX SITU CONSERVATION OF PULTENAEA PARVIFLORA AT MOUNT ANNAN

Cathy Offord,
Horticultural Research Officer,
Mount Annan Botanic Garden, PO Box 913, Campbelltown, NSW

The Horticultural Research Section at Mount Annan Botanic Garden is researching techniques for the conservation of a threatened population of *Pultenaea parviflora* (2V). This species is endemic to Western Sydney and is currently considered to be inadequately conserved (Benson and McDougall, 1991).

The population of *P. parviflora* we have chosen to work on is at Badgery's Creek, near to the site of Sydney's proposed second airport and quite close to Mount Annan. Our project has been funded by the Federal Department of Transport and Communications. The population at Badgery's Creek is very degraded by semi-rural activity with plants now numbering 23 adults confined to a short narrow strip adjacent to both sides of a road. At this site there is regular dumping of household rubbish and stripping of stolen cars. A significant proportion of the area was burnt when a car was set alight there in early 1991 and no regrowth has been observed since. Grazing and market gardening in adjacent paddocks have further exacerbated decline. It is possible that reintroduction into well secured nearby bushland (ie not threatened) may be carried out in the future but this will only occur if we are assured that the plants are able to survive there and do not threaten other native species.

During 1990-1991 we collected material from this population to form an ex situ population at Mount Annan. The primary material taken was cuttings, from some of the 70 adult plants occurring there when we first surveyed the area. Some seeds were collected but in this situation we considered seeds to be a secondary source of material due to possible problems with longevity (they may have to be stored for decades) and the impact of removal of significant amounts of seeds on the viability of the existing population. Only a small amount of cutting material was removed and in some cases appears to have regenerated the plants to some extent.

We now have in our collection one or more plants of each of 46 clonal types, all of which are represented in a stock plant pot collection, field plantings and a seed collection. Because of the problems associated with

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MEMBERSHIP FORM

Name of Agency/Individual..

Postal Address..

....

....Postcode..............................

Phone Number(s).. Fax Numbers(s)..

Contact Person...

MEMBERSHIP FEE STRUCTURE

Federal, State or Local Government agencies, corporations & Industry Associations	$200
Other Non-Profit Organisations	$50
Interested Individuals	$30

Also available is the Recovery Plan for *Grevillea iaspicula* which provides a guide for the preparation of similar plans. This is available at $5 each.

PAYMENT

Membership Fee: $.................
Copies of Recovery Plan:: $.................
Donation: $..................

I enclose my cheque/money order for : $.................

Please make cheques payable to the Australian Network for Plant Conservation.

Do you know of anyone who would also be interested in becoming a member of the ANPC? If so, please provide us with their name and address or you may even wish to consider a gift membership!

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keeping plants in pots or in the field indefinitely, we are investigating a number of different strategies for medium and long-term maintenance of the collection. Tissue culture using seedling explants is proving quite successful and low temperature storage is a possibility. Field plantings at irrigated and unirrigated sites are providing us with information on replanting techniques and already we have found that irrigation is unnecessary during the establishment phase but the provision of an overstorey is vital.

Several other similar projects are in progress at Mount Annan. We are concentrating on species or populations which are at risk in our region including *Microstrobos fitzgeraldii* (2VCi), *Epacris hamiltonii* (2E) and *Grevillea caleyi* (2VCi).

Reference

Rare Bushland Plants of Western Sydney, by Doug Benson and Lyn Mc Dougall, Royal Botanic Gardens Sydney, 1991.

RESEARCH ON SOUTH AUSTRALIA'S ENDANGERED PLANTS

Manfred Jusaitis,
Black Hill Flora Centre,
Maryvale Road, Athelstone, South Australia, 5076.

Several projects are currently in progress at the Black Hill Flora Centre research laboratories, to study the most critically endangered flora of this state. The aim of these projects is to achieve a basic understanding of the biology and habitat requirements of these plants, while elucidating the action of threatening processes on their populations.

Plants under study include *Pultenaea trichophylla*, *Acacia pinguifolia* and *Acacia cretacea* from Eyre Peninsula, *Dodonaea subglandulifera* and *Phebalium glandulosum* from the mid-north, *Phebalium hillebrandii* from the central Mt Lofty Ranges, *Pterostylis arenicola*, *Phebalium brachyphyllum* and *Prostanthera eurybioides* from the Murray Mallee region, *Phebalium lowanense* from the south-east, and *Pomaderris halmaturina*, *Olearia microdisca*, *Phebalium equestre* and *Platysace heterophylla* var. *tepperi* from Kangaroo Island. The majority of these species are not conserved, occurring along roadsides and/or on private property. All are from the agricultural regions of the state, which have largely been cleared for urban and agricultural development.

Research includes the regular monitoring of photo-points, together with studies of phenology of growth and development, flora and seed biology, autecology, propagation and cultivation techniques. As part of this research program, Black Hill Flora Centre has developed an extensive collection of South Australian native species of conservation significance. Many rare or threatened plants are also held as growing specimens, providing a ready supply of fresh material for research or propagation.

Recently, detailed recovery plans were prepared for *Prostanthera eurybioides*, *Acacia cretacea*, *Pultenaea trichophylla*, and *Pterostylis arenicola*. It is anticipated that over a period of 10 years it will be possible to downlist each of these species from endangered to vulnerable, thus avoiding almost certain extinction.

SUGAR GLIDERS, WATTLES AND RURAL EUCALYPT DIEBACK

By Andrew Smith,
Department of Ecosystem Management, University of New England, Armidale, NSW, 2351.

What is Rural Eucalypt Dieback?

Rural Eucalypt Dieback is the death and decline of eucalypts in the pastoral areas following repeated defoliation by leaf-eating insects, particularly scarab beetles. Episodes of dieback follow favourable weather conditions (for insect survival) and are most frequent in tree-thinned rural landscapes, particularly on the cooler, high elevation southern and northern tablelands of New South Wales.

Dieback and the Scarab Beetle
The larvae of scarab beetles live in the soil and feed on grass roots and organic material. After emerging from the soil in spring the adults of some species feed voraciously on eucalyptus leaves. In heavily cleared landscapes with extensive, well fertilized pastures the few remaining eucalypts may be completely stripped of leaves. Repeated defoliation kills sensitive tree species and causes a gradual decline in the health and vigour of others. Under continued dieback we can expect a gradual loss of tree cover and biodiversity throughout the rural landscape.

Dieback Prevention: An Opportunity
Dieback is episodic, giving landholders the opportunity to take preventive action, through sound whole farm planning and forest management, during periods of recovery. Research at the University of New England (Armidale) led by Dr. Andrew Smith from the Department of Ecosystem Management, aims to help landholders keep trees in their landscape through natural biological control. This research has shown that key elements for maintaining forest health and dieback resistance in rural ecosystems are sugar gliders and wattles (Acacia spp).

The Sugar Glider
The sugar glider is one of the most beautiful and intelligent of Australia's many species of possums and gliders. Sugar gliders are common inhabitants of the eucalyptus forests and woodlands of eastern and northern Australia where their robust ecology permits them to survive in forest remnants on agricultural land and the fringes of suburbia. Although common, the sugar glider is rarely encountered because of its nocturnal and secretive habits, except when brought in by the family cat or roused from a tree by firewood harvesters.

The sugar glider is the principal predator of large adult scarab beetles in the forest canopy, consuming up to 15 large adult scarabs per hour at night when the beetles are active. Birds such as frogmouth owls may also take some scarab beetles but most birds are too small and have beaks that are too inadequate for dealing with large, hard Christmas beetles.

Biological Control of Adult Scarabs
Research has shown that in forests unaffected by dieback sugar gliders and birds consume about 80% of all the scarabs and other leaf-eating insects in the forest canopy. When these natural predators are experimentally excluded, insect numbers may increase more than four-fold within a single season. This shows that in a healthy forest vertebrate predators play an important role in protecting trees against defoliation by insects.

In dieback affected forest the number of insects in the canopy may be ten times higher than in a healthy forest, due to a seasonal increase in scarabs coming from nearby pasture. In order to control the number of scarabs in these forests the number of gliders and other predators must also be increased by a factor of 10 or more.

Increasing the density of insectivorous birds in a dieback affected forest is a difficult or impossible task, because there is not enough food to survive the winter, when insects are scarce. But increasing the number of sugar gliders, which feed on wattle gums and other plant exudates (nectar and sap) during winter, can be achieved as part of the normal process of forest restoration.

Research in rural forest remnants in Victoria has shown that the number of sugar gliders is determined by the amount of plant exudates available during winter. The most important exudates are the gums produced by certain species of wattles particularly black Wattle (*Acacia mearnsii*) and the sap of the Apple Box (*Eucalyptus bridgesiana)*. The density of sugar gliders has been shown to range from a minimum of one animal per hectare where wattles are absent, to as many as 12 per hectare where wattles are abundant.

At densities of 10 per hectare sugar gliders could eat around 18 000 large scarab beetles per hectare during the dieback season. This is not enough to consume all scarabs during the peak of a dieback outbreak, but should be sufficient to help trees survive outbreaks and retain sufficient foliage to recover during the intervening periods.

Wattle Gum

Not all acacias produce gums, and not all gums are suitable for sugar gliders. Gums differ in their time of production, quantity of production, nutrient value, solubility and persistence. Gums are mostly produced in large quantities at the driest time of year in response to insect attack and mechanical damage to the stem and branches of wattles. The gums of the black wattle are water-resistant and persist on the trees as a source of food throughout the winter. Other good gum producers include *Acacia dealbata* in high elevation moist environments, *Acacia filicifolia* on the New England Tablelands, *Acacia irrorata* in subcoastal north east New South Wales, and other related species with pinnate foliage. Blackwood (*Acacia melanoxylon)* is not a gum producer.

The Ecology of Wattles

Wattles are a normal component of the forest understory. They produce hardy seeds which regenerate after soil disturbance or fire. Depending on the species, wattles may live 20 - 100 years, before relying on further disturbance for another cycle of regeneration. Wattles have nitrogen fixing nodules on their roots, which increases soil fertility. They also have high levels of nitrogen in their foliage which makes them attractive to herbivores. The greatest enemies of wattles in rural landscapes, and the reason for their absence in most rural remnants, are domestic stock; sheep and cattle. Stock preferentially graze young wattles even when other foods are present in abundance. After long periods of grazing, wattles disappear from the rural landscape except along road edges. Here soil is more often disturbed and regeneration gets some protection from grazing.

Restoring the Forest Ecosystem

By excluding stock from forests for periods of 3 - 10 years (depending on growth rate) the wattle understory will often recover naturally. If natural recovery does not occur it may be necessary to burn or disturb the soil to break the dormancy of the seeds buried in the soil. If this does not work it is necessary to re-plant. Re-planting is expensive but has the advantage that a selection of the best gum, sap and nectar producing species can be chosen. Forest with a healthy understory will not only have more sugar gliders but will have a much greater number and variety of birds and greater health and resistance to dieback.

Other actions which can be taken to improve the habitat for gliders and other natural predators of the scarab beetle include the following:

1) Treehollows. Sugar gliders nest and sleep during the day in tree hollows in the branches and trunks of large old trees. Retain at least four dead or living trees with visible hollows for every hectare of forest.

2) Groundcover. Leave some fallen and hollow logs to provide shelter for echidnas. Echidnas eat about 120 scarab larvae each day on the New England Tablelands and studies have shown that the number of echidnas is limited by the availability of ground cover.

3) Flowering Trees and Shrubs. Flowering plants provide nectar for birds, sugar gliders and parasitic wasps which attack scarab larvae in the soil. Protect flowering trees and shrubs, and when re-planting, select a range of local species which flower at different times of the year (consult a honey producers guide) to ensure a year round supply of nectar.

4) Wildlife Corridors. The natural habitat of the sugar glider is continuous forest, but they can survive in forest remnants in agricultural landscapes, provided that forest patches are greater than about 4ha in area and/or are connected to other larger remnants by corridors. Sugar gliders have been known to disperse more than 1 km along roadside corridors and can survive at high densities in linear forest habitats of little more than a single tree in width. They can also disperse short distances (hundreds of metres) across open pasture. Most effort should go into protecting and restoring roadside, stock route, road reserve and other corridors which link existing forest remnants.

Whole Farm Planning.

Forest protection and restoration in dieback affected areas is costly and can be risky. If restoration targets the wrong area, or uses the wrong procedures many years of costly effort could be lost after a single episode of dieback. Whole farm planning helps to reduce this risk by identifying not only the areas where restoration is most likely to be successful but by locating the areas where retained forests best serve multiple purposes, such as salinity control, erosion control, and the provision of stock shelter.

Further Reading

Chapter 4, "Trees and Other Wildlife", in "Think Trees, Grow Trees", Australian Government Publishing Service, 1985.

CLASSIFIEDS

Members are invited to use this column for announcements such as 'plants available or wanted', 'information wanted', etc

Material Available

Plants of the following species are currently available on request to the Horticultural Development Officer, Mount Annan Botanic Garden, PO Box 913, Campbelltown, NSW, 2560, telephone 046-462477

Acacia chinchillensis
Boronia deanei
Grevillea caleyi
Isopogon fletcheri
Adenanthos detmoldii
Commersonia tatei
Grevillea scapigera
Pultenaea parviflora

Information Wanted

Mr Chen Ping-Liang, of the Nanjing Botanical Garden wishes to have information on the Chinese tree species, *Eucommia ulmoides* (the gutta-percha tree) growing outside China. If readers of the Newsletter are growing this species would they please write to Mr Chen at the address below.

Chen Ping-Ling, Plant Ex-situ Conservation Laboratory, Nanjing Botanical Garden Mem. Sun Yat-Sen,
Nanjing, 210014, Peoples Republic of China

MEMBERSHIP LIST

A copy of the latest list of ANPC members is attached. At the time of writing, membership totals 74.

Adelaide, Botanic Gardens of; South Australia
Alcoa of Australia Ltd.; Western Australia
APPM Forest Products; Tasmania
Association of Societies for Growing Australian Plants
Australian Association of Bush Regenerators
Berwick, City of; Victoria
Boden, Dr Robert; Australian Capital Territory
Botanic Gardens Conservation International; United Kingdom
Botanical Preservation Corps ; United States of America
Briggs, Dr Barbara; New South Wales
Brown, Dr AHD; Australian Capital Territory
Buddee, Miss Dulcie; New South Wales
Burke, Ms C; Queensland
Burns, Mr R; Tasmania
Burrendong Arboretum Trust; New South Wales
Burrows, Dr G; New South Wales
Center for Plant Conservation; United States of America
Champion, Irene; Queensland
Coffs Harbour City Council; New South Wales
CSIRO, Division of Plant Industry; Australian Capital Territory

Donaldson, Mr S; Australian Capital Territory
Dulegal Arboretum; New South Wales
Eurobodalla Botanic Gardens, New South Wales
Friends of the North Coast Regional Botanic Garden; New South Wales
Flecker Botanic Gardens; Queensland
George, Mrs E; Western Australia
Gilfedder, Ms. L; Tasmania
Gordon, Mr David; Queensland
Greening Australia (ACT)
Greening Australia (NSW)
Greening Australia (Vic)
Greening Australia (WA)
Hadlow, Mr Barrie; ACT
Heisler, Mrs. Jan; New South Wales
Honiara Botanic Gardens; Solomon Islands
Hoult, Mr. Mark; Northern Territory
Hunter Region Botanic Gardens; New South Wales
Kingfern Natives; New South Wales
Kings Park and Botanic Gardens; Western Australia
McDonald, Mr. WJF; Queensland
Mason, Mr. David; New South Wales
Mt Coot-tha Botanical Gardens; Queensland
Olive Pink Flora Reserve; Northern Territory
Parsons, Dr. Bob; Victoria
Robinson, Mr. Brett; New South Wales
Royal Botanic Gardens, Sydney; New South Wales
Royal Botanic Gardens, Melbourne; Victoria
Royal Tasmanian Botanical Gardens; Tasmania
Salkin, Mrs Esma; Victoria
Sankowsky, Mr Garry; Queensland
Sell, Mr. Lindsay; New South Wales
SGAP - Dryandra Study Group
SGAP - East Hills ; New South Wales
SGAP - New South Wales Ltd.
SGAP - New England; New South Wales
SGAP - Newcastle; New South Wales
SGAP - North Coast; New South Wales
SGAP - North Shore; New South Wales
SGAP - North West; Tasmania
SGAP - Redlands; Queensland
SGAP - South Australia Region
SGAP - South West Slopes; New South Wales
SGAP - Tasmania Region
Suva Botanical Gardens; Fiji
Tarran, Dr. J; New South Wales
Townsville Botanic Gardens; Queensland
Tumut Ecology Reserve Trust; New South Wales
Vaiima Botanic Gardens; Western Samoa
Ward, Mr. Chris; New South Wales
Wildflower Society of Western Australia - Armadale
Wildflower Society of Western Australia - Mandurah
Wrigley, Mr. John; New South Wales
Worldwide Fund for Nature Australia
Zoological Board of Victoria

THE AUSTRALIAN NETWORK FOR PLANT CONSERVATION

Just over 200 hundred years of European settlement has had a severe impact on Australia's natural ecosystems. The current estimate of extinct plant species in Australia is more than 70, with more than 175 species endangered and another 3200 under some degree of threat.

Fortunately, the community is becoming more conscious of the need to protect global environmentsfrom the threats facing them. It is universally recognised that the preservation of habitat is the most desirable means of conserving the biological diversity of all organisms. However, some of these organisms are so threatened that the only means of saving them will be to secure them outside of their natural habitat until suitable places can be located to establish them. Some may have to be maintained permanently in ex situ collections. This complementary role for ex situ conservation is now being referred to as **integrated conservation**.

In March 1991 the Australian National Botanic Gardens (ANBG), with support from the Federal Endangered Species Program, held a conference entitled *"Protective Custody"*. The aim of the Conference was to involve organisations and individuals interested in plant conservation and to encourage co-operation between these organisations by the formation of a co-ordinating body for plant conservation. Delegates from Britain, Fiji, New Zealand, Indonesia, the Solomon Islands, the United States of America and Western Samoa also attended the Conference.

During the Conference, consensus was reached that the Australian region does need a body to co-ordinate integrated plant conservation . A proposal for the formation of the Australian Network for Plant Conservation (ANPC) was later produced and widely accepted.

The ANPC draws its membership from throughout Australia (in both public and private sectors) and has a national office at the Australian National Botanic Gardens. It will be the co-ordinating organisation for integrated plant conservation in Australia. It will :

i) establish a multi-site National Endangered Species Collection for use in the practical recovery of endangered species as well as for research, education, display and general horticulture.
ii) locate and bring together information on integrated plant conservation activities in Australia and provide access to this information for members.
iii) assist in the national co-ordination of plant conservation projects to avoid duplication of effort.
iv) provide advice to members and promote plant conservation activities.
v) communicate on a regular basis by means of a Newsletter.
vi) organise workshops, training courses and conferences.

For further information on the ANPC please contact the Curator, Australian National Botanic Gardens, P.O. Box 1777, Canberra ACT 2601.